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**Yakov Dlugolensky**

# **Clocks and Watches**







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## *Chapter One*

### RIDDLES

Everybody loves riddles. I am sure you love them too.

So let's begin with two riddles.

The first is an old one, and I thought up the second myself.

Who always goes but never arrives?

Who speaks loudly in an empty room: "tick-tock" and "tick-tock"?

Did you guess who it is?

If not, turn the page over and the picture there will tell you the answer.

Yes, quite right, it is a clock.

Now let us make a clock exactly like it. Ask your mother or father or grannie or granddad to help you.

Have you made it?

Now let us lay the lovely clock aside and discuss time and how to tell it.

## *Chapter Two*

### TWO METHODS OF TELLING THE TIME

There are many methods of telling the time. I'll tell you about two.

I knew a boy who, when asked what the time was, ran to his grannie and made her look at the clock. She looked and told him what the time was—two o'clock, three, as the case might be.

This is the first method.

But I also knew another boy, who went over to the clock, gazed at it for a while and told the time himself—never making a mistake either.

Let us try and master the second method.

Before starting, however, you must remember that time is divided into portions—large and small. People have agreed about it and decided it would be so a long time ago.

And they gave names to the portions:  
they called the big portion an hour,  
a smaller portion, a minute,  
and the smallest, a second.

## *Chapter Three*

### WHAT TIME IS IT?

Now take your lovely cardboard clock. It is really very like a real clock.

It has a circle, the face, with numbers drawn on it, from one to twelve.

It has two hands, a big and a small ones.

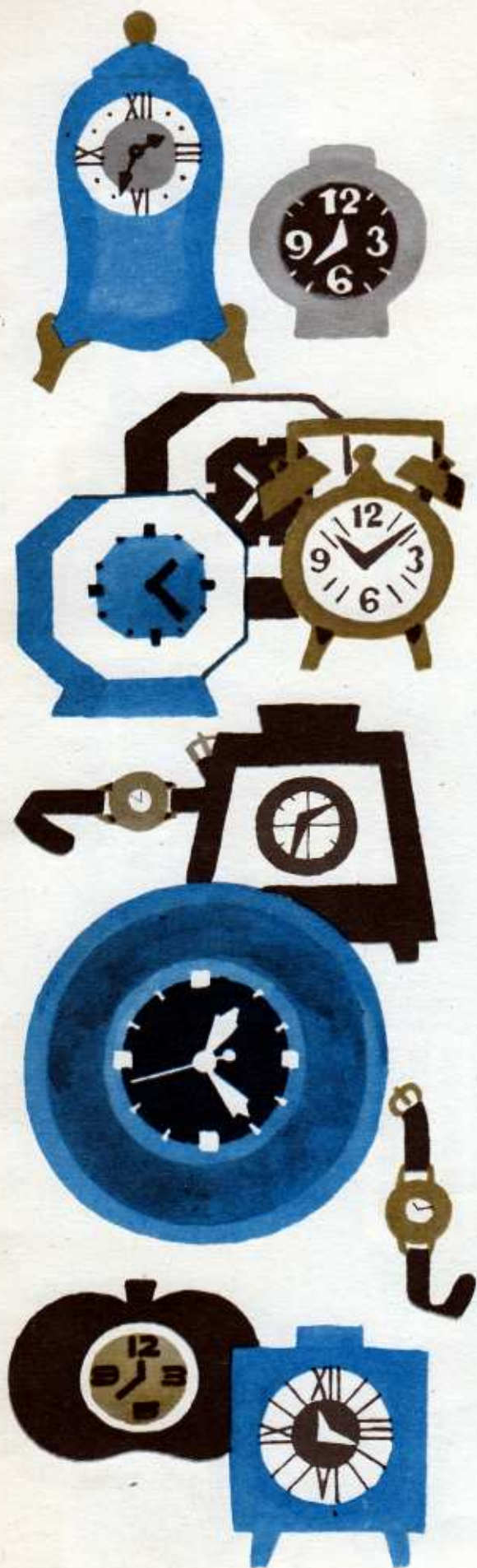
The only thing lacking is the works that would make the hands move.

But let us try to make our clock go without the works.









Let us point both hands, the big and the small ones at the figure 12. Do you know what that means? It means that the time is twelve o'clock.

And now leave the big hand where it is and move the small one.

Move it to the figure 1. Do you know what it means? It means that the time is one o'clock exactly.

What if you move the small hand to the figure two? The clock will then show that it is two o'clock.

If you move it to the figure 3, it will be three o'clock.

If you move it to figure 4, the time will be four o'clock.

And what if you move it all the way to the figure 11? The time will be eleven o'clock.

Each time the small hand pokes its sharp lance-like end at a figure, any figure, one, two, five, seven, eleven or twelve, while the big hand stands at 12, you can give an exact answer to your mother's question, "What's the time?"

Now let us do some checking. If the small hand points at 5 and the big hand points at twelve, what is the time? The answer is: the time is five o'clock.

And now point the big hand at the figure 6 and move the small hand again.

Put it between the figures 12 and 1. What is the time? The time is half past twelve.

Now move the small hand to the position half way between the figures 1 and 2. The time will be half past one.

And if you move the small hand to be half way between 2 and 3, the time will be half past two.

If you place the small hand between 3 and 4, the time will be half past three.









And what if it is placed between 4 and 5? The time is half past four.

Remember: if the big hand stands at the figure 6, and the small hand is half way between two figures, the time is half past twelve, half past five or half past ten—depending upon which figure the small hand had just passed.

Let us do a test. The big hand stands at the figure 6, and the small one between 11 and 12. What is the time?

Answer: the time is half past eleven.

Did you give the right answer? You did. Then you have learnt a lot about telling the time.

And now turn the page over.

#### *Chapter Four*

#### ABOUT A ROOSTER, A SAMOVAR AND AN ALARM CLOCK

You are seeing a whole army of clocks and watches, which help people to tell the time.

The artist did not draw all the clocks and watches that have ever been, because there are too many of them.

This kind of clock is set up on an airplane.

And this kind—on a spaceship.

This is a stop-watch used by judges in sporting competitions.

This is a chess clock.

And this is an alarm clock.

This is a chronometer used on ships.

I shall tell you more about some of these watches and clocks. But I am sure you are wondering why the artist has painted a rooster and a samovar.

He painted them because a rooster is also a kind of clock. A live clock, to be sure, not a mechanical one. In old times, when people had no clocks, roosters helped them to tell the time.











When the rooster crowed in the morning, it meant day had begun, and it was time to get up. When it flew up to its perch in the evening (chickens sleep on perches, you know) it meant it was time to go to bed.

But the rooster could not be always relied on. Sometimes it might tumble off its perch and yell the "Cock-a-doodle-doo!" before it was time. At another time a fox might make its way into the chicken coop and carry the rooster away, and then there would be nobody to waken the people.

So a more reliable clock was invented, one that could not tumble off a roost or become a fox's dinner.

That is why a samovar has been painted on this page. A samovar is also a clock, a water clock. They poured a pailful of water into the samovar and then opened the tap. They knew it took a pail of water an hour to flow out of the samovar. If the water has all flown out, it meant an hour had passed. So they poured in another pailful. They had to keep pouring the water in all day long.

That was a very old clock. But we might be using it still, if they did not invent, eight hundred years ago, a real clock, with a face, hands and the works.

It looked like this.

Ten men could hardly lift it.

It would be set up in the centre of a town on a tall tower. That is why it was called a tower clock. It was the main clock in that town.

One cannot, of course, take such a clock inside a house. So a smaller clock had to be designed to be used in people's houses. Houses were lucky in that a great many clocks were devised to be used in them.

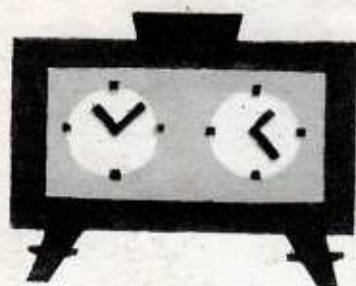
They were:











the mantelpiece clock, to stand above the fireplace;  
the wall clock, to be hung on a wall;  
the grandfather clock, which stood on the floor;  
and, finally, the desk clock to be set up on a desk.

And for those who would not stay at home (such as soldiers and travellers, who are notorious wanderers) the clock-makers designed small clocks, called watches, to be carried in a pocket—pocket watches, or strapped on the wrist—wrist watches.

Nor did the clockmakers forget those who oversleep in the morning. A special clock was made to awake them.

An alarm clock is an excellent thing. You wind the alarm, set it for the time you want to be wakened, and go to bed with an easy heart. At exactly the appointed hour and minute, the alarm will go off loudly: trr-r-r-r (modern alarm clocks have a more melodious voice) and you wake up and get out of bed.

It appears that in olden times people slept more soundly, and a simple ring often failed to waken them. For such heavy sleepers special alarm clocks were made: a cannon-clock, which fired a shot at the appointed hour, because it was joined to a clock which ignited the powder;

the rocking alarm clock; the clock was connected to a complicated mechanism, which, at the appointed hour, began to shake and rock and toss the bed, so that the sleeper, willy-nilly, had to get out of it.

These kinds of clocks were intended for men.

For women, weaker creatures, the alarm clocks were gentler.

There was an alarm clock, for instance, which sprayed the sleeping woman with perfume or lemonade.

Some ladies loved to be awakened by perfume.

Others preferred lemonade.

Besides such a ladies' alarm clock, the artist has drawn a sea chronometer. Not a single ship will put out to sea without a chronometer. The usual kind of clock is not suitable for sea service: it cannot stand the constant rolling of the ship and soon begins to show wrong time.

In old times, before the chronometers were invented, sea captains often lost their way, ran aground or were late for their destinations.

And of course they dreamed of a reliable clock.

The Spanish king, who regarded himself as the patron of the seafarers, promised a big reward to whoever would invent a clock that would show exact time on board ship. The English Parliament did likewise.

Finally the chronometer was invented by a man named John Harrison. He came to the English Admiralty and placed the chronometer on the desk.









"What's that?" asked the English admirals.

"A chronometer, the dream of all sea captains."

The chronometer was tested at once. Aship equipped with it put out to sea, and it never strayed off course and arrived in the port of its destination exactly on time.

Beside the chronometer in the picture stands the chess clock. It will soon be celebrating its hundredth anniversary.

Before it was invented, one chess-player might spend ten minutes to decide on a move, and another might take up all day to think of an answering move. It was enough to drive you crazy. They would say to him:

"Don't drag out the time, grand master."

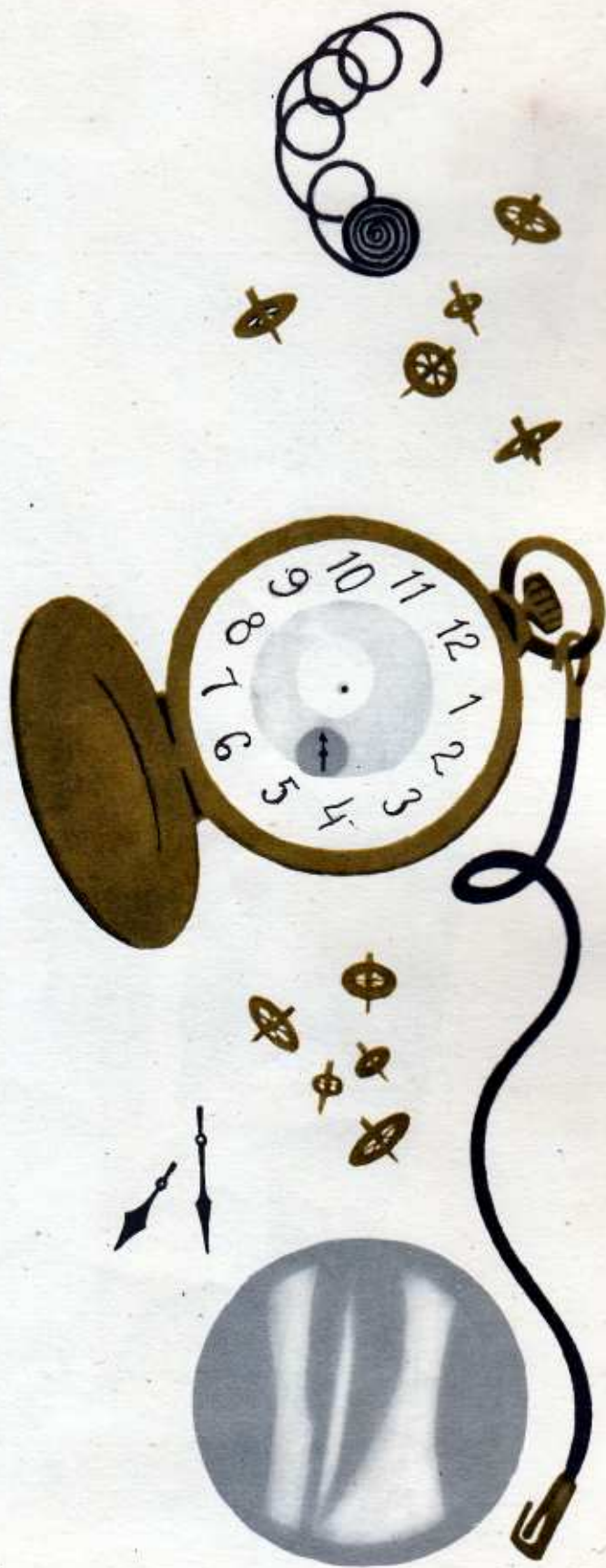
And he would reply:

"I am not dragging out the time, I am simply considering my move."

Now each player is given a certain amount of time. If he fails to make the required number of moves in the time allotted to him, the red flag drops on the clock. It means: your time is up, you have lost the game, grand master!

All the clocks and watches I have told you about are still serving people. Of course from time to time they are repaired, with new details replacing the worn ones. The only clocks which are no longer in use are the cannon clock, the samovar clock and the perfume alarm clock.

Now that you have learnt many things about clocks and watches, and know how to tell the time, I want to ask you something...









## *Chapter Five*

### AND WHAT IS INSIDE?

What is inside clocks and watches?

I'm sure you asked yourself this question many times.

So did all children of all times and nations.

So did I.

Indeed, what is inside a clock? Who sits there inside the box saying loudly: "Tick-tock, tick-tock"?

When I was a little boy, I once decided to solve this question once and for all. My grandfather had a big pocket watch in the shape of an onion, which he sometimes let me hold. There was no such watch in my own house.

So, I used the chance when Grandfather left me alone in the room and began to dismantle the watch.

First of all I removed the glass which covered the clock face and pulled off the hands.

To my surprise the watch went on ticking.

Since I could do nothing else to the watch face, I turned the watch over and removed the back lid. And then I saw what it was ticking—the entire compact and beautiful watch works, all the innumerable tiny bolts and chirring cogwheels and the taut coils of the slender spring. The whole works was moving, twirling and ticking.

The first to fall victim to my curiosity was the fragile spring. Then I pried out a little cogwheel.

There is no need to describe the process of destruction in detail. My grandfather would not speak to me for a long time after the incident. The watch had been a prize for gallantry in action when he served in Budyonny's cavalry army.

He was unable to find a watchmaker to undertake the repairing of his watch.

It is different today. A child needn't break open his grandfather's watch to find out what is ticking inside it. Any toy-shop will sell you a wonder box called "Young Watchmaker". The box contains details from which you can assemble a real clock with your own hands. The clock will say "tick-tock" and show time too.

## *Chapter Six*

### ABOUT A TOOTHY PIKE AND A HAMMER

I am sure you will be able to assemble a very good clock out of the details in the box.

But remember that you mustn't shake it, sprinkle dust on it or pour water over it. Only a specially made watch can stand this kind of manhandling because it is made

waterproof,

dust-proof

and shock-proof.









It means one can bathe without unstrapping it, wield a hammer with this hand and ride on a bicycle along a dusty and lumpy dirt-track.

To prove it here are some curious facts.

A Leningrad newspaper reported:

"Ivan Kononenko, a fitter from a state farm, caught a pike. Imagine his surprise when, while cleaning the fish, he found a watch inside! He wound it and the watch began to go. And it has been going for three years since."

Since a pike lives in water, this watch has certainly stood the waterproof test.

Another newspaper carried the following report:

"I am a cobbler by trade. I work with nails and hammer. I never remove my watch from my wrist while working, although at first I had fears about it. I have now become convinced that a shock-proof watch really does not mind shaking. I have been hammering for ten years, but the watch still keeps perfect time."

And now for yet another, and last, newspaper report:

"The writer of this letter is a gardener, Sidorov by name. Two years ago I lost my watch. This summer I found it under an apple-tree, where it had been lying for two years in dust, rain and frost. I wound it and it went again. I want to thank our watch factory for its excellent produce."

This is the kind of watch which is manufactured today.

Surely no old watch could have stood such a test!







## *Chapter Seven*

### A CLOCK FIRING AT A CRUISER

This chapter is not about clocks but about a person whose life was bound up with a clock.

Various cities in various countries have tower clocks.

There was also one in a small Norwegian town. And an amazing story is told in connection with that clock.

Every day the old clock-keeper mounted the stairs and gave a shot from an old cannon that stood on the tower beside the clock. And the townsfolk knew it was noon.

Then the day came when the little town with the tower clock, and, in fact, all of Norway, was occupied by nazi troops. A German cruiser dropped anchor in the town's harbour.

That day the old clock-keeper mounted the stairs as usual, but loaded his cannon with an ancient cannon ball. He trained the cannon on the nazi cruiser and at exactly twelve o'clock he fired the shot.

It so happened that the cannon ball hit the ammunition hold and the cruiser exploded.

The nazis never found the old man because the people of the town hid him away. And when Norway regained its freedom, the old man was awarded the highest military order.

Small wonder! It is not every day that an old man fires from an ancient cannon and destroys an enemy cruiser.

## *Chapter Eight*

### ABOUT YET ANOTHER CLOCK-KEEPER

Ivan Fedotovitch Fedotov never fired from any cannon, but he was awarded the medal "For Defence of Leningrad" just the same. Because he had also performed a military feat.

When war started, Ivan Fedotovitch was an old man already. For nearly forty years he had worked in a Leningrad institute as a clock-keeper. Every day he went up to the institute's tower and wound the clock, pulling up the fifty-kilogram weight which consisted of a pail filled with lead shot.

The old clock-keeper had a chance to be evacuated, to get away from nazi bombs, shells and starvation. But he refused.

"Who will mind the clock if I go away? Suppose a shell burst nearby and damaged it? Who will repair the clock? As for hunger ... all Leningraders go hungry, why shouldn't I as well?"

And he remained in the city.

Fedotov's clock never stopped for a second all through the nine hundred days







of the siege of the city. Leningraders checked their watches by it, and so did the soldiers leaving for the trenches on Leningrad's outskirts.

One can imagine how hard it was for an old man to mount a tall staircase every day and pull up the weights with his hunger-weakened hands.

The Leningraders, as you know, never gave in. The old clock-keeper, too, lived to see Victory Day.

And on May 9, 1945, when the Soviet people celebrated victory over nazi Germany, Ivan Fedotovitch, as usual, went up to his tower and wound the old clock.

### *Chapter Nine*

#### ABOUT TIME

Now that you have read almost the whole of the book, I want to ask you a question.

What is time? After all we have been using the word throughout the book.

"Why," you will probably say in surprise. "Time is clocks, an alarm clock for instance. It's clear to everybody."

Clear it may be, but it is not quite correct.

Because a clock is not time, it is a machine for counting time. Time itself is invisible, it has no colour or smell, and it cannot be felt with your hand.

Think—there are a number of things we mention constantly in conversation, but which cannot be felt with our hand, such as air.

Still, people have learned to weigh up the invisible air, and so they have built perfectly visible and tangible clocks for counting the invisible time.

### *Chapter Ten*

#### ABOUT THE SCHOOLBOY VASYA, MACARONI AND SECONDS

As we have had a chance to see, time is kept for us not only by clocks and watches but also by watchmakers and clock-keepers.

But if each of us does not keep track of time, neither clocks nor watches, not even clock-keepers will be able to do much.

Let us look at an example.

A minute—is it much or little?

It may be a lot for some and very little for others. One will do a lot in a minute, another will accomplish nothing in an hour.

A young man may say to his mother:

"I want an ice-cream."

It's a straightforward request, and the speaking of it takes up just exactly one second—neither more nor less than necessary.

Yet the same young man may spend all of ten seconds whining:

"Please, Mummy, I want an ice-cream, please, can I have one?" and so on.



In ten seconds the famous sprinter Valery Borzov ran a hundred metre race and won a gold Olympic medal.

In one minute the dumpling machine bakes fifty dumplings.

In one minute the macaroni machine makes five kilos of macaroni.

And the eight-year old schoolboy Vasya Ivanov achieves nothing at all in a minute. He does not even try. He says a minute is too little.

Now let us see.

If you wasted a minute, it is as though you have failed to manufacture five kilos of macaroni.

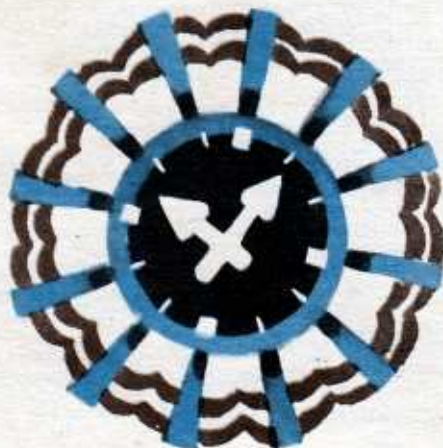
And if you have idled away a whole hour, you may consider yourself responsible for a whole shop going short of macaroni.

That is the meaning of a second, a minute or an hour.

If your alarm clock is lost, you can buy a new one. But if you have lost time, nothing can be done to remedy it.

That is why it is so important that both children and grown-ups should understand that

TIME IS PRECIOUS.

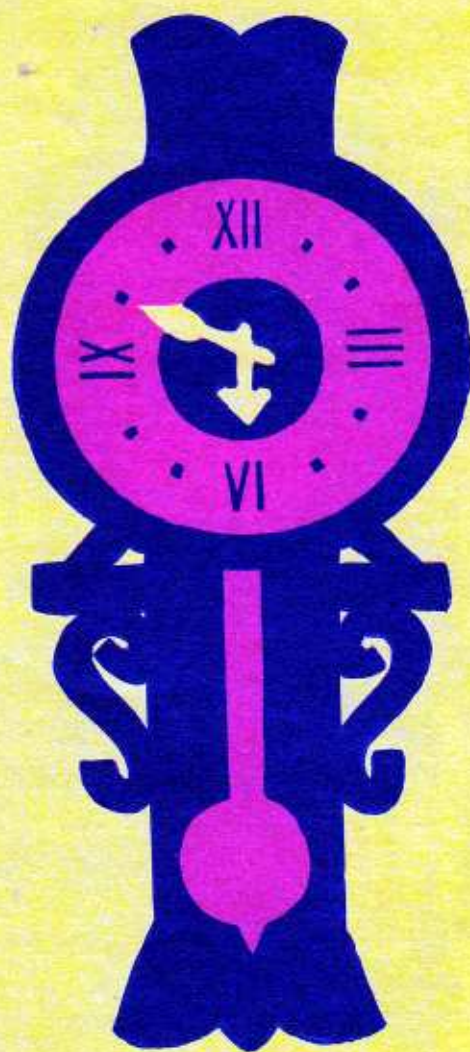








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Я. Длуголенский  
ЧТО ВЫ ЗНАЕТЕ О ЧАСАХ  
*На английском языке*